## LISTING OF CLAIMS

This listing of claims will replace all prior versions and listings of claims in the present application. Claim 13 was inadvertently omitted in the claims as originally filed.

The invention claimed is:

1. (Currently Amended) A method for designing a profile extrusion die, comprising the steps of:

Defining a cross-sectional profile geometry for a desired extrusion, the cross-sectional profile geometry having at least one external edge, and at least one major cross-sectional diameter;

Constructing a finite element plate model having the cross-sectional profile geometry and a plurality of edge points;

Constraining the finite element plate model at the edge points;

Creating a pressurized finite element plate model by applying pressure to a side of the finite element plate model to deflect a surface of the finite element plate model;

Creating a measured edge deflection by measuring a deflection of at least one edge of the pressurized finite element plate model;

Calculating a multiplication factor F, based on a calculated extrudate die swell value DS, said multiplication factor, F, to be used for scaling at least one measured edge deflection;

Calculating at least one corrected edge deflection by applying the multiplication factor, F, to a measured edge deflection; and

Creating a final profile die geometry, by repeating the step of calculating at least one corrected edge deflection until a die profile shape is defined.

2. (Currently Amended) A method for designing a profile extrusion die according to claim 1, wherein the finite element plate model has a thickness of about ten percent of the major cross-sectional diameter of the finite element plate model.

3. (Original) A method for designing a profile extrusion die according to claim 2, wherein the finite element plate model has mechanical properties of a rubber material.

4. (Original) A method for designing a profile extrusion die according to claim 3, wherein cross-sectional profile geometry further comprises internal edges and internal edge points.

5. (Original) A method for designing a profile extrusion die according to claim 4, wherein the pressure applied to a side of the finite element plate model deflects a surface of the finite element plate model by no more than the thickness of the finite element plate model.

6. (Original) A method for designing a profile extrusion die according to claim 5, wherein the finite element plate model is constructed using a computer software program.

7. (Original) A method for designing a profile extrusion die according to claim 6, wherein the measured edge deflection is created using a computer software program.

8. (Original) A method for designing a profile extrusion die according to claim 7, wherein the multiplication factor is calculated using a computer software program.

9. (Original) A method for designing a profile extrusion die according to claim 8, wherein the corrected edge deflection is calculated using a computer software program.

10. (Original) A method for designing a profile extrusion die according to claim 9, wherein the final profile geometry is created using a computer software program.

11. (Original) A method for designing a profile extrusion die according to claim 10, further comprising the additional step of transferring the final profile geometry to a numerically controlled machine configured to manufacture a profile die.

12. (Currently Amended) A numerically controlled machine for converting a desired extrusion profile geometry to a manufactured profile extrusion die, comprising:

Means for inputting a cross-sectional profile geometry for a desired extrusion, the profile geometry having at least one external edge and at least one major cross-sectional diameter;

Means for constructing a finite element plate model with the cross-sectional profile geometry, a thickness of approximately ten percent of the major cross-sectional diameter, mechanical properties of a rubber material, and a plurality of edge points;

Means for constraining the finite element plate model by pinning at the edge points;

Means for creating a pressurized finite element plate model by applying pressure to a side of the finite element plate model to deflect a surface of the finite element plate model by no more than the thickness of the finite element plate model;

Means for creating a measured edge deflection by measuring a deflection of at least one edge of the pressurized finite element plate model;

Means for calculating a multiplication factor F, based on a calculated extrudate die swell value DS, said multiplication factor, F, to be used for scaling at least one measured edge deflection;

Means for calculating at least one corrected edge deflection by applying the multiplication factor, F, to a measured edge deflection;

Means for creating a final profile geometry, by repeating the step of calculating at least one corrected edge deflection until a die profile shape is defined; and

Means for removing material from a production blank to produce a manufactured profile die according to the defined die profile shape.

[[14.]] 13. (Currently Amended) A numerically controlled machine for converting a desired extrusion profile geometry to a manufactured profile extrusion die according to claim [[13]] 12, wherein the numerically controlled machine is a milling machine.

[[15.]] 14. (Currently Amended) A numerically controlled machine for converting a desired extrusion profile geometry to a manufactured profile extrusion die according to claim [[13]] 12, wherein the numerically controlled machine is an electron discharge machine.

[[16.]] 15. (Currently Amended) A numerically controlled machine for converting a desired extrusion profile geometry to a manufactured profile extrusion die according to claim [[15]] 14, wherein the electron discharge machine is a wire electron discharge machine.

[[17.]] 16. (Currently Amended) An electronic control system for converting a desired cross-sectional profile geometry to a final profile die geometry, comprising:

Means for inputting a cross-sectional profile geometry for a desired extrusion, the profile geometry having at least one external edge and at least one major cross-sectional diameter;

Means for constructing a finite element plate model with the cross-sectional profile geometry, a thickness of approximately ten percent of the major cross-sectional diameter, mechanical properties of a rubber material, and a plurality of edge points;

Means for constraining the finite element plate model by pinning thereof at the edge points;

Means for creating a pressurized finite element plate model by applying pressure to a side of the finite element plate model to deflect a surface of the finite element plate model by no more than the thickness of the finite element plate model;

Means for creating a measured edge deflection by measuring a deflection of at least one edge of the pressurized finite element plate model;

Means for calculating a multiplication factor F, based on a calculated extrudate die swell value DS, said multiplication factor, F, to be used for scaling at least one measured edge deflection;

Means for calculating at least one corrected edge deflection by applying the multiplication factor, F, to a measured edge deflection; and

Means for creating a final profile die geometry, by repeating the step of calculating at least one corrected edge deflection until a die profile shape is defined.